

Applicant : David L. Anglin
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Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A primary alkaline battery, comprising:
a cathode comprising between about 82% and about 92% of manganese dioxide by weight and between 6% and 10% of carbon fibers by weight;
an anode comprising zinc;
a separator; and
an alkaline electrolyte.
- 2-8. (Cancelled)
9. (Previously Presented) The battery of claim 1, wherein the cathode comprises less than about 90% of manganese dioxide by weight.
10. (Previously Presented) The battery of claim 1, wherein the cathode comprises less than about 88% of manganese dioxide by weight.
11. (Cancelled)
12. (Previously Presented) The battery of claim 1, wherein the cathode comprises between about 84% and about 90% of manganese dioxide by weight.
13. (Original) The battery of claim 1, wherein the carbon fibers have an average diameter less than about 300 nanometers.

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14. (Original) The battery of claim 1, wherein the carbon fibers have an average diameter between about 100 nanometers and about 250 nanometers.

15. (Original) The battery of claim 1, wherein the carbon fibers have an average diameter less than about 250 nanometers.

16. (Previously Presented) The battery of claim 1, wherein the carbon fibers are heat-treated carbon fibers.

17. (Original) The battery of claim 16, wherein the carbon fibers have been heat treated at a temperature greater than about 2000 °C.

18. (Previously Presented) The battery of claim 16, wherein the carbon fibers have been heated treated at a temperature between about 2600 °C and about 3100 °C.

19. (Original) The battery of claim 1, wherein the carbon fibers have a length less than about 2×10^5 nanometers.

20. (Original) The battery of claim 1, wherein the carbon fibers have an average length between about 500 nanometers and about 200,000 nanometers.

21. (Original) The battery of claim 1, wherein the carbon fibers have an average length between about 70,000 nanometers and about 100,000 nanometers.

22. (Original) The battery of claim 1, wherein the carbon fibers have between about 1 and about 500 layers of graphite.

23. (Original) The battery of claim 22, wherein the carbon fibers have between about 40 and about 100 layers of graphite.

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24. (Original) The battery of claim 1, wherein the carbon fibers have an average external surface area between about 10 m²/g and about 50 m²/g.

25. (Original) The battery of claim 1, wherein the carbon fibers have a surface energy between about 50 mJ/m² and about 300 mJ/m².

26. (Original) The battery of claim 1, wherein the carbon fibers have a graphitic index of less than about 85%.

27. (Previously Presented) The battery of claim 1, wherein the carbon fibers have an average length equal to or greater than an average particle size of the manganese dioxide.

28. (Original) The battery of claim 1, wherein the cathode further comprises a surfactant.

29. (Previously Presented) The battery of claim 28, wherein the surfactant is selected from the group consisting of polyvinyl alcohol, ethylene-vinyl alcohol, and polyvinylbutyrol.

30. (Cancelled).

31. (Currently Amended) A primary alkaline battery, comprising:

a cathode comprising between about 82% and about 92% of manganese dioxide by weight and between 6% and 10% by weight of heat-treated carbon fibers having an average diameter less than about 300 nanometers;

an anode comprising zinc;
a separator; and
an alkaline electrolyte.

32. (Cancelled)

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33. (Previously Presented) The battery of claim 31, wherein the cathode comprises between 6% and 7% of carbon fibers by weight.

34. (Previously Presented) The battery of claim 31, wherein the cathode has an electrical conductivity at least 3 times greater than a cathode having 6% of graphite by weight.

35. (Previously Presented) A primary alkaline battery, comprising:
a cathode comprising between about 82% and about 92% of manganese dioxide by weight and between 6% and 10% of heat-treated carbon fibers by weight;
an anode comprising zinc;
a separator; and
an alkaline electrolyte.

36. (Previously Presented) The battery of claim 35, wherein the cathode comprises between about 84% and about 90% of the manganese dioxide by weight.

37-38. (Cancelled)

39. (Previously Presented) The battery of claim 35, wherein the carbon fibers have an average diameter less than about 300 nanometers.

40. (Previously Presented) The battery of claim 35, wherein the carbon fibers have an average diameter between about 100 nanometers and about 250 nanometers.

41. (Previously Presented) The battery of claim 35, wherein the carbon fibers have an average diameter less than about 250 nanometers.

42. (Cancelled)

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43. (Previously Presented) The battery of claim 35, wherein the carbon fibers have been heat treated at a temperature greater than about 2000 °C.

44. (Previously Presented) The battery of claim 35, wherein the carbon fibers have been heated treated at a temperature between about 2600 °C and about 3100 °C.

45. (Previously Presented) The battery of claim 35, wherein the carbon fibers have a length less than about 2×10^5 nanometers.

46. (Previously Presented) The battery of claim 35, wherein the carbon fibers have an average length between about 500 nanometers and about 200,000 nanometers.

47. (Previously Presented) The battery of claim 35, wherein the carbon fibers have an average length between about 70,000 nanometers and about 100,000 nanometers.

48. (Previously Presented) The battery of claim 35, wherein the carbon fibers have between about 1 and about 500 layers of graphite.

49. (Previously Presented) The battery of claim 48, wherein the carbon fibers have between about 40 and about 100 layers of graphite.

50. (Previously Presented) The battery of claim 35, wherein the carbon fibers have an average external surface area between about $10 \text{ m}^2/\text{g}$ and about $50 \text{ m}^2/\text{g}$.

51. (Previously Presented) The battery of claim 35, wherein the carbon fibers have a surface energy between about 50 mJ/m^2 and about 300 mJ/m^2 .

52. (Previously Presented) The battery of claim 35, wherein the carbon fibers have a graphitic index of less than about 85%.

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53. (Previously Presented) The battery of claim 35, wherein the carbon fibers have an average length equal to or greater than an average particle size of the manganese dioxide.

54. (Previously Presented) The battery of claim 35, wherein the cathode further comprises a surfactant.

55. (Previously Presented) The battery of claim 35, wherein the surfactant is selected from the group consisting of polyvinyl alcohol, ethylene-vinyl alcohol, and polyvinylbutyrol.

56. (Cancelled).

57. (Previously Presented) The battery of claim 1, wherein the cathode comprises between 6% and 7% of carbon fibers by weight.

58. (Previously Presented) The battery of claim 35, wherein the cathode comprises between 6% and 7% of carbon fibers by weight.